

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
15 December 2005 (15.12.2005)

PCT

(10) International Publication Number
WO 2005/119722 A1

(51) International Patent Classification⁷: **H01J 1/30**

Apt. 110-802, Shinsung-dong, Yuseong-gu, Daejeon 305-707 (KR).

(21) International Application Number:

PCT/KR2005/001664

(74) Agent: SHIN, Young Moo; Ace Tower 4th Floor 1-170, Soonhwa-dong, Chung-gu, Seoul 100-130 (KR).

(22) International Filing Date: 3 June 2005 (03.06.2005)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2004-004104 4 June 2004 (04.06.2004) KR

(71) Applicant (for all designated States except US): ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE [KR/KR]; 161, Gajeong-dong, Yuseong-gu, Daejeon 305-350 (KR).

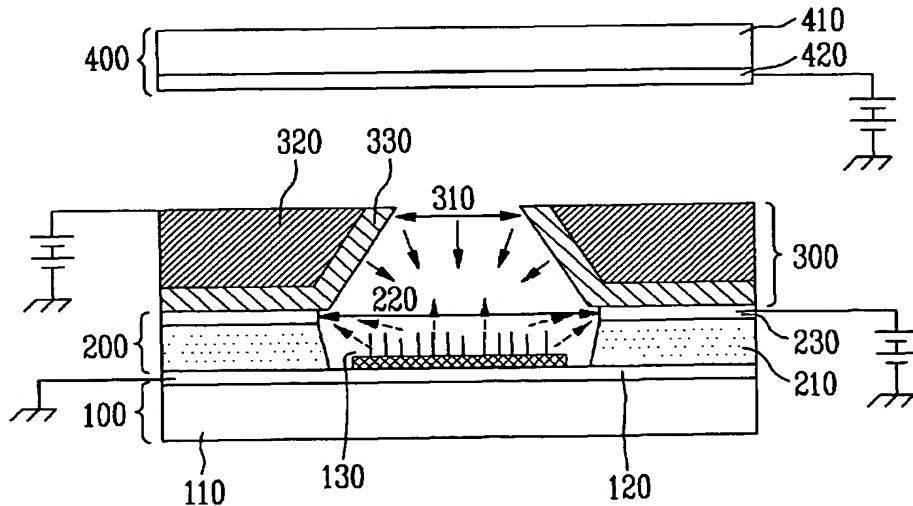
(72) Inventors; and

(75) Inventors/Applicants (for US only): SONG, Yoon Ho [KR/KR]; Woosung Apt. 127-405, Jeongrim-dong, Seo-gu, Daejeon 302-795 (KR). LEE, Jin Ho [KR/KR]; Hanbit Apt. 108-1803, Eoeun-dong, Yuseong-gu, Daejeon 305-333 (KR). KANG, Kwang Yong [KR/KR]; Hanwoo

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: FIELD EMISSION DEVICE AND FIELD EMISSION DISPLAY DEVICE USING THE SAME



(57) Abstract: Provided are a field emission device and a field emission display device using the same. The field emission device includes a cathode portion having a substrate, a cathode electrode formed on the substrate, and a field emitter connected to the cathode electrode; a field emission-suppressing gate portion formed on the cathode portion around the field emitter and surrounding the field emitter; and a field emission-inducing gate portion having a metal mesh with at least one penetrating hole, and a dielectric layer formed on at least a part of the metal mesh, wherein the field emission-suppressing gate portion suppresses electrons from being emitted from the field emitter, and the field emission-inducing gate portion induces electrons to be emitted from the field emitter. According to this configuration, the conventional problems of the field emission device including a gate leakage current, electron emission caused by an anode voltage, electron beam divergence can be significantly improved.

WO 2005/119722 A1



Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.